

REMARKS

Favorable reconsideration of this application, in light of the following discussion and in view of the present amendment, is respectfully requested.

Claims 1-4 are pending.

Entry of Amendment under 37 C.F.R. § 1.116

The Applicant requests entry of this Rule 116 Response because: the response were not earlier presented because the Applicant believed in good faith that the cited references did not disclose the present invention as previously claimed.

The M.P.E.P. further articulates that the reason for any non-entry should be explained expressly in the Advisory Action.

I. Rejection under 35 U.S.C. § 102

In the Office Action, at page 2, numbered paragraph 5, claims 1-4 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,987,591 to Jyumonji et al. in view of U.S. Patent No. 5,980,082 to Watanabe et al. This rejection is respectfully traversed because the combination of the teachings of Jyumonji and Watanabe does not discuss or suggest:

setting means for setting a jog-feed coordinate system with respect to the corrected positions of the taught points using information from the offline programming system; and

modification means for modifying the corrected positions of the taught points in the operation program based on positions of a control point of the operation tool or the position correction tool, at which positions or orientations of the operation tool or the position correction tool are designated by jog feeds using the jog-feed coordinate system such that the control point takes objective positions for the taught points,

as recited in independent claim 1.

As a non-limiting example, the present invention according to claim 1, for example, is directed to a taught position modification device for correcting positions of taught points in an operation program of a robot. The device includes a setting means for setting a jog-feed coordinate system with respect to the corrected positions of the taught points using information from an offline programming system. The device further includes modifying the corrected positions of the taught points in the operation program based on positions of a control point of

the operation tool or the position correction tool, at which positions or orientations of the operation tool or the position correction tool are designated by jog feeds using the jog-feed coordinate system such that the control point takes objective positions for the taught points.

Jyumonji discusses that a position and posture of a workpiece are detected, and a robot is controlled to approach a position from another position based on the result of the detection. For the approaching movement, an image is displayed on a display device to perform a jog feed of the robot on the screen. Jyumonji discusses that the positions P and Q of the workpiece are detected, and upon receipt of sensor data representing the result of detection, a robot controller 1 calculates data representing the deviation of the workpiece W with respect to the reference position on a robot coordinate system and then calculates a necessary amount of correcting the robot position.

As conceded by the Examiner, Jyumonji does not discuss or suggest setting a jog-feed coordinate system with respect to corrected positions of taught points that were corrected based on a determined position or orientation of an object, and Jyumonji does not discuss or suggest modifying the corrected positions of the taught points based on positions of a control point of an operation tool or a position correction tool, at which positions or orientations of the tool are designed by jog feeds using the jog-feed coordinate system. Jyumonji discusses only that a robot correction amount is calculated at R5 of Fig. 5, for example. However, Jyumonji does not discuss or suggest that a jog-feed coordinate system is utilized in modifying corrected positions of taught points. The Examiner alleges that Watanabe makes up for the deficiencies in Jyumonji. The Applicants respectfully disagree.

Watanabe discusses a robot movement control device in which a teaching point set in a robot movement control program is corrected to another position using jog-feed buttons. Watanabe further discusses that a position of the robot moved by jog-feed is monitored, the teaching point located nearest to the position is determined and a jog-feed control means is instructed to shift the robot when the robot approaches any teaching point in a movement command program, to the teaching point located nearest to the position. Watanabe discusses that a teaching pendant 40 includes jog-feed buttons 47 indicating a plus or minus linear direction for each of X, Y and Z axis, the X, Y and Z axis being part of an orthogonal coordinate system. Watanabe also discusses that, alternatively, a joint axis (J1 to J6) is able to be selected so that jog-feed of the robot for the selected joint axis can be carried out.

Watanabe does not discuss or suggest that a jog-feed coordinate system is set with respect to the corrected positions of the taught points. Watanabe does not suggest the use of a

jog-feed coordinate system and does not particularly discuss or suggest that a jog-feed coordinate system is based on corrected positions of taught points. The jog-feed system is part of an orthogonal coordinate system or a joint axis system, but Watanabe does not suggest that a jog-feed coordinate system is set with respect to corrected positions of taught points, which were corrected based on a determined position or orientation of an object that had an image which was captured by a sensor. Watanabe discusses that a point Pt of a workpiece 20 is assumed to be a teaching point predetermined in a movement command program and that an attempt to shift the tool 12 to a point Pa is made in order that the point Pa close to the teaching point Pt is set as a new teaching point in place of the point Pt. Further, Watanabe discusses that an operator depresses a jog-feed button 47 on a teaching pendant 40 to shift the tool 12 (i.e., a tool center point) toward the target point Pa.

However, while Watanabe discusses that the jog-feed button 47 is depressed in order to shift the tool center point toward the target point Pa and when the tool reaches the point Pa, the correction of the teaching point is instructed by depressing the function key 42. But Watanabe does not discuss that correcting the teaching point and rewriting coordinate data of the teaching point to a new teaching point is setting a jog-feed coordinate system with respect to corrected positions of taught points, and does not suggest modifying the corrected positions of taught points based on positions of a control point of the operation or position correction tool, at which positions or orientations of the tool are designated by jog feeds using the jog-feed coordinate system such that the control point takes objective positions for the taught points.

In contrast, the present specification specifies that when the taught point scheduled to be modified is selected, the PC 5 sets a jog-feed coordinate system whose coordinate origin is at that taught point, and notifies the robot controller 1 of the jog-feed coordinate system. Thus, while Watanabe discusses that the rewrite from the coordinate data of the teaching point Pt to the coordinate data of the point Pa is performed, the rewrite of the coordinate data is performed only after the tool has been shifted by jog-feed to reach the point Pa. Watanabe does not discuss or suggest that a jog-feed coordinate system is set with respect to the corrected positions of taught points and that the corrected positions of the taught points are modified based on positions of a control point of a tool, at which positions or orientations of the tool are designated by jog feeds using the jog-feed coordinate system such that the control point takes objective positions for the taught points.

Therefore, as the combination of the teachings of Jyumonji and Watanabe does not suggest "setting means for setting a jog-feed coordinate system with respect to the corrected

positions of the taught points using information from the offline programming system; and modification means for modifying the corrected positions of the taught points in the operation program based on positions of a control point of the operation tool or the position correction tool, at which positions or orientations of the operation tool or the position correction tool are designated by jog feeds using the jog-feed coordinate system such that the control point takes objective positions for the taught points,” as recited in independent claim 1, claim 1 patentably distinguishes over the references relied upon. Accordingly, withdrawal of the § 103(a) rejection is respectfully requested.

Claims 2-4 depend either directly or indirectly from independent claim 1 and include all the features of claim 1, plus additional features that are not discussed or suggested by the references relied upon. For example, claim 2 recites “display means for displaying an image of a model of the object based on information from the offline programming system, and for indicating coordinate axes of the jog-feed coordinate system in accordance with lines defined by the corrected positions of the taught points in the image of the model.” Therefore, claims 2-4 patentably distinguish over the references relied upon for at least the reasons noted above. Accordingly, withdrawal of the § 103(a) rejection is respectfully requested.

Conclusion

In accordance with the foregoing, claims 1-4 are pending and under consideration.

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

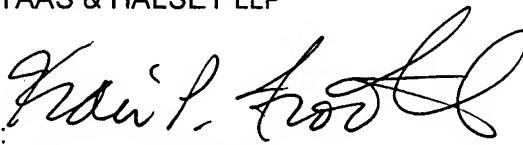
Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: 9/21/07

By: 
Kari P. Footland
Registration No. 55,187

1201 New York Avenue, NW, 7th Floor
Washington, D.C. 20005
Telephone: (202) 434-1500
Facsimile: (202) 434-1501